

Systems	Properties, Patterns, and Models	Consistency and Change
<p><b>6 – The student knows the impact of energy transformations in everyday life.</b></p>	<p><b>5 – The student knows the effects of waves on everyday life</b></p>	<p><b>4 – The student knows concepts of force and motion evident in everyday life.</b></p>
<p>6A – Describe the law of conservation of energy.</p> <p>6B – Investigate and demonstrate the movement of heat through solids, liquids, and gases by convection, conduction, and radiation.</p> <p>6C – Analyze the efficiency of energy conversions that are responsible for the production of electricity such as from radiant, nuclear, and geothermal sources, fossil fuels such as coal, gas, oil and the movement of water or wind.</p> <p>6D – Investigate and compare economic and environmental impacts of using various energy sources.</p> <p>6E – Measure the thermal and electrical conductivity of various materials and explain results.</p> <p>6F – Investigate and compare series and parallel circuits.</p> <p>6G – Analyze the relationship between an electric current and the strength of its magnetic field using simple electromagnets.</p> <p>6H – Analyze the effects of heating and cooling processes in systems such as weather, living, and mechanical.</p>	<p>5A – Demonstrate wave types and their characteristics through a variety of activities such as modeling with ropes and coils, activating turning forks, interpreting data on seismic waves.</p> <p>5B – Demonstrate waves interactions including interference, polarization, reflection, refraction, resonance within various materials.</p> <p>5C – Identify uses of electromagnetic waves in various technological applications such as fiber optics, optical scanners, and microwaves.</p> <p>5D – Demonstrate the application of acoustic principles such as echolocation, musical instruments, noise pollution, and sonograms.</p> <p><b>7 – The student knows relationships between properties of matter and its components.</b></p> <p>7A – Investigate and identify properties of fluids including density, viscosity, and buoyancy.</p> <p>7B – Research and describe the historical development of the atomic theory.</p> <p>7C – Identify constituents of various materials or objects such as metal salts, light sources, firework displays, and stars using spectral-analysis techniques.</p> <p>7D – Relate the chemical behavior of an element including bonding, to its placement on the periodic table.</p> <p>7E – Classify samples of matter from everyday life as being elements, compounds, or mixtures.</p> <p><b>8 – The student knows that changes in matter affect everyday life.</b></p> <p>8A – Distinguish between physical and chemical changes in matter such as oxidation, digestion, changes in states, and stages in the rock cycle.</p> <p>8B – Analyze energy changes that accompany chemical reactions such as those occurring in heat packs, cold packs, and glow sticks to classify them as endergonic or exergonic reactions.</p> <p>8C – Investigate and identify the law of conservation of mass.</p> <p>8D – Describe the types of nuclear reactions such as fission and fusion and their roles in applications including medicine and energy production.</p> <p>8E – Research and describe the environmental and economic impact of the end-products of chemical reactions.</p> <p><b>9 - The student knows how solution chemistry is a part of everyday life.</b></p> <p>9A – Relate the structure of water to its function as the universal solvent.</p> <p>9B – Relate the concentration of ions in a solution to physical and chemical properties such as pH, electrolytic behavior, and reactivity.</p> <p>9C – Simulate the effects of acid rain on soil, buildings, statues, or microorganisms.</p> <p>9D – Demonstrate how various factors influence solubility including temperature, pressure, and nature of solute and solvent.</p> <p>9E – Demonstrate how factors such as particle size influence the rate of dissolving.</p>	<p>4A- Calculate speed, momentum, acceleration, work, and power in systems such as in the human body, moving toys, and machines.</p> <p>4B – Investigate and describe applications of Newton's laws such as vehicle restraints, sports activities, geological processes, and satellite orbits.</p> <p>4C – Analyze the effects caused by changing force or distance in simple machines as demonstrated in household devices, the human body, and vehicles.</p> <p>4D – Investigate and demonstrate mechanical advantage and efficiency of various machines such as levers, motors, wheels and axles, pulleys, and ramps.</p>